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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,670	07/03/2006	Stephen Moreton	0068905-000267	3701
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EXAMINER				
KILPATRICK, BRYAN T				
ART UNIT		PAPER NUMBER		
1797				
NOTIFICATION DATE		DELIVERY MODE		
12/31/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary

Application No.

10/549,670

Applicant(s)

MORETON, STEPHEN

Examiner

BRYAN T. KILPATRICK

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 3 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/GS/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendments and arguments/remarks filed on 01 September 2009 have been entered and fully considered.
2. The information disclosure statement filed on 12 August 2009 has been entered and fully considered.
3. The declaration under 37 C.F.R. 1.132 filed on 01 September 2009 has been entered and fully considered.
4. Instant claims 1 and 22 have been amended and instant claims 2-3 have been cancelled, all by Applicant's amendment.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-11, 19-29, 32, and 34-35 are rejected under 35 U.S.C. 102(b) as being anticipated by W. O. 02/057772 (MORETON).

Instant claim 1 recites an indicating desiccant for indicating relative humidity at below 20% by a color change comprising a silica-based material provided with, as the active indicator system, a source of iron (Fe) and a source of bromide (Br); wherein the desiccant is essentially copper-free or has an amount of copper less than 0.002% by weight with respect to the silica-based material. MORETON discloses an indicating desiccant comprised of copper and bromide sources, and iron (III) salts as a colored material, and that the silica-based material has been impregnated with a source of copper, a source of bromide, and a dye or colored material such as iron (III) salts (lines 18-34 of page 3). MORETON discloses a general purpose indicating desiccant functioning below about 30% and showing a marked color change in lines 9-12 of page 3, and discloses the use of up to 0.5 percent by weight of copper in a silica-based material (line 26 of page 3) used in a desiccant.

Instant claim 4 recites the source of iron is present in an amount up to 2.0% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material. Instant claim 5 recites the source of iron is present in an amount of up to 1.0% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material. Instant claim 6 recites the source of iron is present in an amount of up to 0.6% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

Instant claim 7 recites the source of iron is present in an amount of up to 0.45% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

Instant claim 8 recites the source of iron is present in an amount of at least 0.01% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

Instant claim 9 recites the source of iron is present in an amount of at least 0.02% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

Instant claim 10 recites the source of iron is present in an amount of 0.02 to 1.0% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

Instant claim 11 recites the source of iron is present in an amount of 0.05 to 0.3% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

MORETON discloses a preferable range between 0.01 and 2.0 percent by weight of the silica-based material for transition metal salts such as salts containing iron in lines 4-11 of page 4.

Instant claim 19 recites the bromide source comprises a water-soluble salt.

Instant claim 20 recites the bromide source is selected from one or more of the group consisting of alkali metal bromides, alkaline earth metal bromides, transition metal bromides and ammonium bromide. Instant claim 21 recites the bromide source is selected from one or more of the group consisting of sodium bromide, potassium bromide, calcium bromide, magnesium bromide, zinc bromide and ammonium bromide.

MORETON discloses the use of water-soluble bromide and ammonium bromide in lines 29-36 of page 2.

Instant claim 22 recites the source of iron is an iron (III) salt or salts. Instant claim 23 recites the iron source is provided by one or more salts selected from the group consisting of iron (II) sulphate, iron (III) chloride, iron (III) nitrate, iron (III) sulphate, ammonium iron (II) sulphate, ammonium iron (III) sulphate and potassium iron (III) sulphate. MORETON discloses the use of iron salts and particular iron salts such as iron (III) sulphate, ammonium iron (II) sulphate, ammonium iron (III) sulphate and potassium iron (III) sulphate in line 34 of page 3 to line 7 of page 4.

Instant claim 24 recites the silica- based material is silica gel. Instant claim 25 recites the silica gel is a beaded silica gel. Instant claim 26 recites the silica gel is a granular silica gel. MORETON discloses the silica gel limitations in lines 13-17 of page 2.

Instant claim 27 recites the silica gel is a dry or humidified gel. MORETON discloses the use of humidified gel in line 22 of page 4.

Instant claim 28 recites the silica gel has a pore volume to nitrogen in the range 0.2 to $2.0 \text{ cm}^3\text{g}^{-1}$ and a BET surface area in the range 200 to $1500 \text{ m}^2\text{g}^{-1}$. MORETON discloses this limitation in lines 18-21 of page 2.

Instant claim 29 recites a method of preparing an indicating desiccant comprising impregnating a silica-based material with a source of iron and a source of bromide to produce an essentially copper-free product in which the iron and bromide are the active indicators. MORETON disclose in lines 13-18 of page 4 a method of impregnating a silica-based material with copper, bromide, and optionally a dye or colored material that can be an iron salt as described in lines 4-7 of page 4.

Instant claim 32 recites the gel is soaked in solution for a period in the range of 2 to 24 hours. MORETON discloses this limitation in line 8 of page 5.

Instant claim 34 recites the desiccant is essentially copper-free. Instant claim 35 recites the copper is present in an amount less than 0.002% by weight with respect to the anhydrous silica-based material. MORETON discloses the use of up to 0.5 percent by weight of copper in a silica-based material (line 26 of page 3) used in a desiccant.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 and 4-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over W. O. 02/057772 (MORETON).

Instant claim 1 recites an indicating desiccant for indicating relative humidity at below 20% by a color change comprising a silica-based material provided with, as the active indicator system, a source of iron (Fe) and a source of bromide (Br); wherein the desiccant is essentially copper-free or has an amount of copper less than 0.002% by weight with respect to the silica-based material. MORETON discloses an indicating desiccant comprised of copper and bromide sources, and iron (III) salts as a colored material, and that the silica-based material has been impregnated with a source of copper, a source of bromide, and a dye or colored material such as iron (III) salts (lines 18-34 of page 3). MORETON discloses a general purpose indicating desiccant functioning below about 30% and showing a marked color change in lines 9-12 of page 3, and discloses the use of up to 0.5 percent by weight of copper in a silica-based material (line 26 of page 3) used in a desiccant.

As previously stated above, MORETON discloses a general purpose indicating desiccant functioning below about 30% and discloses and the use of up to 0.5 percent by weight of copper in a silica-based material used in a desiccant. Since MORETON is from the same field of silica-based desiccant as the current instant application, it would have been obvious to one of ordinary skill in the art to apply the indicating desiccant of MORETON similarly as the indicating desiccant of the current instant application since the indication of 20% relative humidity via color change, and less than 0.002% by weight of copper present is expressly encompassed by MORETON – see above.

Instant claims 4-28 and 34-35 are dependent on previously rejected instant claim 1, and therefore rejected as well.

Instant claim 12 recites the bromine content is equal to or greater than the amount of iron. Instant claim 13 recites the source of bromide is present in an amount such that the weight ratio of Br to Fe is at least 0.1:1. Instant claim 14 recites the source of bromide is present in an amount such that the weight ratio of Br to Fe is at least 0.5:1. Instant claim 15 recites the source of bromide is present in an amount such that the weight ratio of Br to Fe is at least 1:1. Instant claim 16 recites the source of bromide is present in an amount such that the weight ratio of Br to Fe is up to 100:1. Instant claim 17 recites the source of bromide is present in an amount such that the weight ratio of Br to Fe is up to 50:1. Instant claim 18 recites the source of bromide is present in an amount such that the weight ratio of Br to Fe is up to 20:1.

MORETON discloses in lines 4-11 of page 4 the range of 0.01 to 2.0 percent by weight of a silica-based material for transition metal salts used, in particular iron salts. MORETON discloses that source of copper is up to 0.5 percent by weight of a silica-based material in line 24 of page 2. MORETON discloses that source of bromide is dictated by the amount of copper present in lines 37-38 of page 2, and is based on ratios between bromide and copper such as 5:1 and 2000:1 (line 38, page 2 to lines 1, page 3). MORETON meets these limitations in view of the relationships between the amount of transition metal salts used and the ratio between bromide and copper.

Instant claim 29 recites a method of preparing an indicating desiccant comprising impregnating a silica-based material with a source of iron and a source of bromide to

produce an essentially copper-free product in which the iron and bromide are the active indicators. MORETON disclose in lines 13-18 of page 4 a method of impregnating a silica-based material with copper, bromide, and optionally a dye or colored material that can be an iron salt as described in lines 4-7 of page 4.

Instant claim 30 recites the source of iron is present in an amount up to 2.0 percent by weight, calculated as Fe with respect to weight of the anhydrous silica-based material, and the source of bromide in an amount such that the weight ratio of Br to Fe is at least 0.1:1.

MORETON discloses that source of copper is up to 0.5 percent by weight of a silica-based material in line 24 of page 2. MORETON discloses that source of bromide is dictated by the amount of copper present in lines 37-38 of page 2, and is based on ratios between bromide and copper such as 5:1 and 2000:1 (line 38, page 2 to lines 1, page 3). MORETON meets this limitation in view of the relationships between the amount of transition metal salts used and the ratio between bromide and copper.

Instant claim 31 recites a humidified silica gel containing from 20 to 30% water weight is soaked in a solution containing between 0.1% and the saturation point of an iron salt and a source of bromide, excess solution is drained from the treated silica gel and the silica gel is dried at a temperature in the range 80°C to 230°C. MORETON discloses in lines 7-29 of page 5 of a method of impregnating a humidified silica gel with

copper, bromide, and an optional dye that MORETON discloses in line 35 of page 3 to line 7 of page 4 can be substituted with a suitable colored material such as an iron salt.

Instant claim 32 recites the gel is soaked in solution for a period in the range of 2 to 24 hours. MORETON discloses this limitation in line 8 of page 5.

Instant claim 33 recites impregnation is effected by mixing a humidified silica gel containing from 15 to 30 percent moisture by weight with a solution containing a source of iron and a source of bromide, the amount of solution used being just sufficient to produce the required loading of iron and bromide on the silica gel, and subsequently drying the treated silica gel at a temperature in the range 80°C to 230°C. MORETON discloses in lines 7-29 of page 5 of a method of impregnating a humidified silica gel with copper, bromide, and an optional dye that MORETON discloses in line 35 of page 3 to line 7 of page 4 can be substituted with a suitable colored material such as an iron salt.

Response to Arguments

Applicant's arguments/remarks filed 01 September 2009 have been fully considered but they are not persuasive.

Applicant states on p. 8 of the remarks that, "The '772 publication does not teach a copper-free desiccant. The '772 publication does not teach a desiccant that includes less than 0.0002% by weight of copper." As pointed out by the applicant on p. 8 of the remarks, the '772 publication (MORETON) discloses copper amounts **up to** 0.5 percent

by weight relative to the weight of the silica-based material (lines 25-27 of p. 3), which expressly encompasses copper-free and less than 0.002% by weight.

Applicant states on p. 9 of the remarks that, "Claim 1 also requires that the desiccant indicate 'humidity at a relative humidity below 20% by a color change.'" As disclosed above, MORETON discloses a general purpose indicating desiccant functioning below about 30% and showing a marked color change in lines 9-12 of page 3 – this clearly encompasses Applicant's limitation of below 20% by color change.

Applicant states on p. 10 of the remarks and the Declaration of Stephen Moreton, Ph.D. that, "Nothing in the '772 publication teaches or suggests that the combination of bromine and iron would be beneficial to the efficacy of an indicating desiccant at relative humidities below 20%." As previously stated, MORETON discloses a general purpose indicating desiccant containing bromine and copper, functioning below about 30%, and showing a marked color change in lines 9-12 of page 3. MORETON goes on to disclose the use of a dye or other colored material with the desiccant (lines 25-26 of page 3), and that these dyes or colored materials include iron salts (line 30, page 3 to line 12, page 4). Furthermore, all the data in the Tables of MORETON disclose data for a relative humidity below 20% where they disclose data at 0% relative humidity.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYAN T. KILPATRICK whose telephone number is (571)270-5553. The examiner can normally be reached on Monday - Friday, 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. T. K./
Examiner, Art Unit 1797

/Samuel P Siefke/
Primary Examiner, Art Unit 1797